

E I 28: SOLAR / 1087 - 79 / 03

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SOLAR/1087-79/03

Monthly Performance Report

ORTIZ & REILL DEVELOPERS, INC.
HOUSE LOT 8

MARCH 1979

MAR 14 1980



U.S. Department of Energy

National Solar Heating and
Cooling Demonstration Program

National Solar Data Program

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MONTHLY PERFORMANCE REPORT

ORTIZ & REILL DEVELOPERS, INC.
HOUSE LOT 8

MARCH 1979

I. SYSTEM DESCRIPTION

The Ortiz & Reill Developers, Inc., House Lot 8, is one of two instrumented single-family residences in Escondido, California. The home has approximately 1536 square feet of conditioned space. Solar energy is used for domestic-hot-water (DHW) heating and space heating. The solar energy system has an array of flat-plate collectors with a gross area of 192 square feet. The array faces 29 degrees east of south at an angle of 45 degrees to the horizontal. Water is the transfer medium that delivers solar energy from the collector array to storage and to the space heating and hot water loads. Solar energy is stored in a 750-gallon tank located in the ground floor utility room. Heated city water is stored in a 66-gallon DHW tank. When solar energy is insufficient to satisfy the space heating load, a gas furnace provides auxiliary energy for the space heating system. Similarly, an electrical heating element in the DHW tank provides auxiliary energy for DHW heating. Energy from an hydronic fireplace radiates directly into the living space. This energy supplements solar modes 1 and 2. The fireplace-to-storage mode activates if the fireplace is being used, the temperature difference between its water plenum and storage output is more than 9°F, and there is no demand for space heating. During operation, water is circulated from storage through the fireplace heat exchanger. The system, shown schematically in Figure 1, has four modes of solar operation.

Mode 1 - Collector-to-Storage: This mode activates when the outlet of the collector array exceeds that of the bottom of the storage tank by more than 9°F. Water is circulated from the tank through the collectors until the temperature differential is less than 3°F.

Mode 2 - Storage-to-Space Heating: This mode activates when the manually preset thermostat located in the heated space indicates a demand for space heating. Heated water is circulated from storage through a heat exchanger in the air-handling unit and returned to storage. If the demand cannot be satisfied by energy from storage, the gas furnace is activated to provide auxiliary heat. The fireplace can also add energy to the water circulating from storage before it enters the air-handling unit. If the fireplace is being used and the temperature difference between its water plenum and storage output is more than 9°F, valve D400 is activated and energy is added to the water from the fireplace heat exchanger.

Mode 3 - Storage-to-DHW: This mode activates when there is a temperature difference exceeding a pre-set differential between storage and the DHW tank and there is no demand for space heating. Incoming city water enters the DHW tank, where it is heated by water circulating from storage through a heat exchanger in the tank.

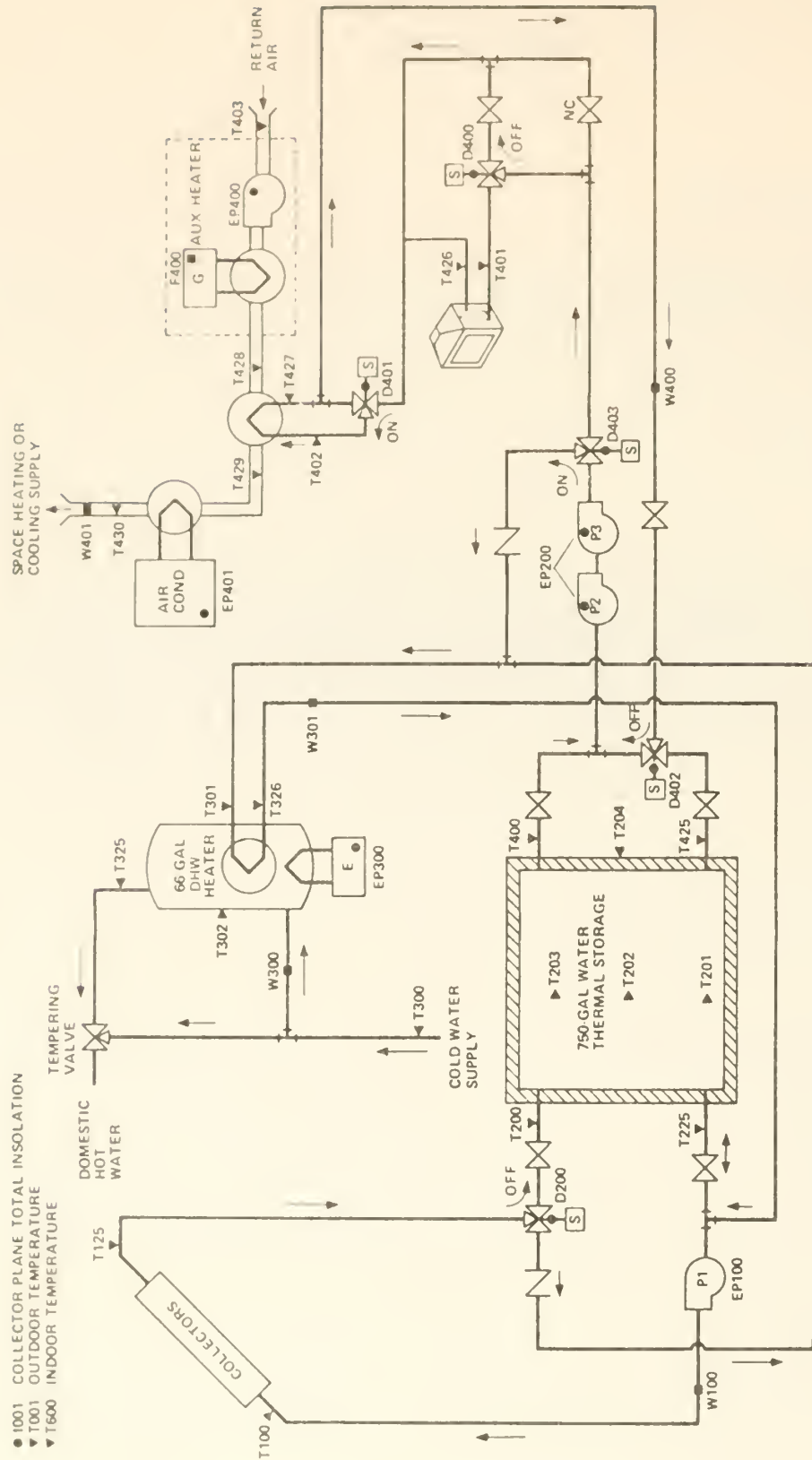


Figure 1. ORTIZ AND REILL DEVELOPERS, INC., LOT NO. 8 SOLAR ENERGY SYSTEM SCHEMATIC

Mode 4 - Collector-to-DHW: This mode activates when the temperature in the DHW tank falls below 140°F and the collector output temperature exceeds the DHW tank temperature. Water circulates through the heat exchanger in the DHW tank and returns to the collectors.

II. PERFORMANCE EVALUATION

INTRODUCTION

The site was occupied in March and the solar energy system operated continuously during the month. Solar energy satisfied 100 percent of the DHW requirements and 9 percent of the space heating requirements. The solar energy system provided electrical energy savings of 0.44 million Btu and a fossil fuel energy savings of 0.37 million Btu.

WEATHER CONDITIONS

During the month, total incident solar energy on the collector array was 9.5 million Btu for a daily average of 1597 Btu per square foot. This was below the estimated average daily solar radiation for this geographical area during March of 1851 Btu per square foot for a plane facing 29 degrees east of south with a tilt of 45 degrees to the horizontal. The average ambient temperature during March was 56°F as compared with the long-term average for March of 58°F. The number of heating degree-days for the month (based on a 65°F reference) was 288, as compared with the long-term average of 219. The number of cooling degree-days was 8, as compared with the average of zero.

THERMAL PERFORMANCE

Collector - The total incident solar radiation on the collector array for the month of March was 9.5 million Btu. During the period the collector loop was operating the total insolation amounted to 7.6 million Btu. The total collected solar energy for the month of March was 2.6 million Btu, resulting in a collector array efficiency of 27 percent, based on total incident insolation. Solar energy delivered from the collector array to storage was 1.1 million Btu, while solar energy delivered from the collector array directly to the loads amounted to 0.49 million Btu. Energy loss during transfer from the collector array to storage and loads was 1.0 million Btu. This loss represented 38 percent of the energy collected. Operating energy required by the collector loop was 0.081 million Btu.

Storage - Solar energy delivered to storage was 1.1 million Btu and auxiliary energy contribution to storage was 0.05 million Btu. There were 0.66 million Btu delivered from storage to the DHW and space heating subsystems. Energy loss from storage was 0.54 million Btu. This loss represented 48 percent of the energy delivered to storage. The storage efficiency was 52 percent: This is calculated as the ratio of the sum of the energy removed from storage and the change in stored energy, to the energy delivered to storage. The average storage temperature for the month was 110°F.

DHW Load - The DHW subsystem consumed 0.81 million Btu of solar energy and an insignificant amount of auxiliary electrical energy to satisfy a hot water load of 0.80 million Btu. The solar fraction of this load was 100 percent. Losses from the DHW subsystem were 0.01 million Btu. The DHW subsystem consumed a total of 0.28 million Btu of operating energy, resulting in an electrical energy savings of 0.54 million Btu. A daily average of 56 gallons of DHW was consumed at an average temperature of 124°F delivered from the tank.

Space Heating Load - The space heating subsystem consumed 0.22 million Btu of solar energy and 2.2 million Btu of auxiliary thermal energy (equivalent to 3.5 million Btu of auxiliary fossil fuel energy) to satisfy a space heating load of 2.4 million Btu. The solar fraction of this load was 9 percent. The space heating subsystem consumed a total of 0.12 million Btu of operating energy, resulting in an electrical energy expense of 0.022 million Btu and a fossil fuel energy savings of 3.5 million Btu. The slight imbalance shown is attributed to problems in data resolution.

OBSERVATIONS

In satisfying 32 percent of the combined DHW and space heating load, a total of 1.6 million Btu was lost from the system. Energy loss during transport from the collector array to storage and the DHW heat exchanger equalled 1.0 million Btu. Transport losses between storage and the DHW heat exchanger added to the energy loss between storage and the space heating heat exchanger totalled 0.12 million Btu. Thermal losses from the storage tank and the DHW subsystem totalled 0.52 million Btu. The system losses represented 62 percent of the solar energy collected for the month.

ENERGY SAVINGS

The solar energy system provided a net electrical energy savings of 0.44 million Btu. The DHW subsystem provided an electrical energy savings of 0.54 million Btu, while the space heating subsystem incurred an electrical energy expense of 0.022 million Btu and provided a fossil fuel energy savings of 0.37 million Btu.

III. ACTION STATUS

There are currently no action items.

SOLAR HEATING AND COOLING DEMONSTRATION PROGRAM

MONTHLY REPORT SITE SUMMARY

SITE: ORTIZ AND PEILL, LOT 8
REPORT PERIOD: MARCH, 1979
ESCONDIDO, CALIFORN
SOLAR/1087-70/03

SITE/SYSTEM DESCRIPTION:

ORTIZ AND PEILL IS A SINGLE FAMILY DWELLING. THE SOLAR ENERGY SYSTEM PROVIDES SPACE HEATING AND DOMESTIC HOT WATER. HEATING. WATER IS USED AS THE ENERGY COLLECTION AND STORAGE MEDIUM. SOLAR ENERGY IS SUPPLIED TO THE DHW TANK THROUGH A HEAT EXCHANGER WHICH CONNECTS TO THE COLLECTION LOOP OR TO THE STORAGE TANK. ELECTRICAL RESISTANCE COILS PROVIDE AUXILIARY ENERGY AS REQUIRED. SOLAR ENERGY IS SUPPLIED TO THE SPACE HEATING SYSTEM FROM THE STORAGE TANK. A FIREPLACE AND A GAS FIRED FURNACE PROVIDE AUXILIARY ENERGY AS REQUIRED.

GENERAL SITE DATA:

INCIDENT SOLAR ENERGY 9.504 MILLION BTU
COLLECTED SOLAR ENERGY 4.9500 BTU/SQ. FT.
AVERAGE AMBIENT TEMPERATURE 2.558 MILLION BTU
AVERAGE BUILDING TEMPERATURE 13324 BTU/SQ. FT.
ECSS SOLAR CONVERSION EFFICIENCY 56 DEGREES F
ECSS OPERATING ENERGY 70 DEGREES F
TOTAL SYSTEM OPERATING ENERGY 0.11 MILLION BTU
TOTAL ENERGY CONSUMED 0.091 MILLION BTU
6.588 MILLION BTU

SUBSYSTEM SUMMARY:

LOAD	HOT	WATER	HEATING	COOLING	SYSTEM TOTAL
SOLAR FRACTION USED	0.797		2.437	N.A.	2.234
SOLAR ENERGY USED	100		9	N.A.	32
OPERATING ENERGY	0.814		0.223	N.A.	1.037
AUX. THERMAL ENERGY	0.276		0.121	N.A.	0.478
AUX. ELECTRIC FUEL	0.001		2.151	N.A.	2.214
AUX. FOSSIL FUEL	0.001		N.A.	N.A.	0.001
ELECTRICAL SAVINGS	N.A.		3.460	N.A.	3.460
FOSSIL SAVINGS	0.538		-0.022	N.A.	0.435
	N.A.		0.372	N.A.	0.372
			0.640		

SYSTEM PERFORMANCE FACTOR:

DENOTES UNAVAILABLE DATA
@ DENOTES NULL DATA
N.A. DENOTES NOT APPLICABLE DATA

REFERENCE: USER'S GUIDE TO THE MONTHLY PERFORMANCE REPORT
OF THE NATIONAL SOLAR DATA PROGRAM, FEBRUARY 28, 1978.
SOLAR/0004-78/18

SOLAR HEATING AND COOLING DEMONSTRATION PROGRAM

MONTHLY REPORT SITE SUMMARY

SITE: ORTIZ AND REILL, LOT 8
REPORT PERIOD: MARCH, 1978
ESCONDIDO, CALIFORN
SOLAP/1087-78/03

SITE/SYSTEM DESCRIPTION: ORTIZ AND REILL IS A SINGLE FAMILY DWELLING. THE SOLAR ENERGY SYSTEM PROVIDES SPACE HEATING AND DOMESTIC HOT WATER. HEATING. WATER IS USED AS THE ENERGY COLLECTION AND STORAGE MEDIUM. SOLAR ENERGY IS SUPPLIED TO THE DHW TANK THROUGH A HEAT EXCHANGER WHICH CONNECTS TO THE COLLECTION LOOP OR TO THE STORAGE TANK. ELECTRICAL RESISTANCE COILS PROVIDE AUXILIARY ENERGY AS REQUIRED. SOLAR ENERGY IS SUPPLIED TO THE SPACE HEATING SYSTEM FROM THE STORAGE TANK. A FIREPLACE AND A GAS FIRED FURNACE PROVIDE AUXILIARY ENERGY AS REQUIRED.

GENERAL SITE DATA:

INCIDENT SOLAR ENERGY 10.027 GIGA JOULES
COLLECTED SOLAR ENERGY 562124 KJ/SQ.M.
AVERAGE AMBIENT TEMPERATURE 2.689 GIGA JOULES
AVERAGE BUILDING TEMPERATURE 151306 KJ/SQ.M.
ECSS SOLAR CONVERSION EFFICIENCY 13 DEGREES C
ECSS OPERATING ENERGY 21
TOTAL SYSTEM OPERATING ENERGY 0.11 GIGA JOULES
TOTAL ENERGY CONSUMED 0.386 GIGA JOULES
0.505 GIGA JOULES
6.851 GIGA JOULES

SUBSYSTEM SUMMARY:

	HOT	WATER	HEATING	COOLING	SYSTEM TOTAL
LOAD	0.841		2.571	N.A.	3.412
SOLAR FRACTION USED	100			N.A.	32
SOLAR ENERGY USED	0.859		0.236	N.A.	1.094
OPERATING ENERGY	0.291		0.128	N.A.	0.505
AUX. THERMAL ENG	0.001		2.270	N.A.	2.336
AUX. ELECTRIC FUEL	0.001		N.A.	N.A.	0.001
AUX. FOSSIL FUEL	N.A.		3.651	N.A.	3.651
ELECTRICAL SAVINGS	0.568		-0.023	N.A.	0.459
FOSSIL SAVINGS	N.A.		0.393	N.A.	0.393
SYSTEM PERFORMANCE FACTOR:			0.640		

SYSTEM PERFORMANCE FACTOR:

* DENOTES UNAVAILABLE DATA
@ DENOTES NULL DATA
N.A. DENOTES NOT APPLICABLE DATA

REFERENCE: USER'S GUIDE TO THE MONTHLY PERFORMANCE REPORT
OF THE NATIONAL SOLAR DATA PROGRAM, FEBRUARY 28, 1978,
SOLAR/0004-78/18

MONTHLY REPORT

SIVE: ORTIZ AND REILL, LOT 8
REPORT PERIOD: MARCH, 1970

ESCONDIDO, CALIFORNIA

SOLAR/1087-79/03

DAY OF MONTH	INCIDENT SOLAR ENERGY MILLION BTU	AMBIENT TEMP DEG-F	ENERGY TO LOADS MILLION BTU	AUX THERMAL TO ECSS MILLION BTU	ECSS OPERATING ENERGY MILLION BTU	ECSS ENERGY REJECTED MILLION BTU	ECSS SOLAR CONVERSION EFFICIENCY
1	0.041	48	0.022	0.000	0.000	0.000	0.537
2	0.046	48	0.040	0.000	0.003	0.003	0.087
3	0.040	50	0.067	0.000	0.003	0.003	0.164
4	0.008	57	0.065	0.000	0.003	0.003	0.075
5	0.045	65	0.033	0.000	0.004	0.004	0.103
6	0.073	70	0.040	0.000	0.003	0.003	0.060
7	0.051	68	0.027	0.000	0.004	0.004	0.076
8	0.015	62	0.031	0.000	0.003	0.003	0.107
9	0.018	60	0.027	0.000	0.003	0.003	0.107
10	0.032	60	0.027	0.000	0.003	0.003	0.091
11	0.040	62	0.033	0.000	0.003	0.003	0.084
12	0.033	60	0.033	0.000	0.003	0.003	0.245
13	0.012	56	0.030	0.000	0.002	0.002	0.172
14	0.026	55	0.046	0.000	0.002	0.002	0.120
15	0.029	55	0.019	0.000	0.002	0.002	0.100
16	0.027	53	0.023	0.000	0.002	0.002	0.115
17	0.026	49	0.015	0.000	0.002	0.002	0.115
18	0.023	50	0.017	0.000	0.001	0.001	0.082
19	0.021	51	0.012	0.000	0.001	0.001	0.258
20	0.015	55	0.008	0.000	0.000	0.000	0.100
21	0.030	55	0.000	0.000	0.005	0.005	0.088
22	0.045	55	0.000	0.000	0.005	0.005	0.087
23	0.045	55	0.040	0.000	0.004	0.004	0.107
24	0.039	59	0.020	0.000	0.004	0.004	0.080
25	0.037	60	0.030	0.005	0.000	0.000	0.291
26	0.049	55	0.042	0.000	0.002	0.002	0.171
27	0.011	55	0.000	0.000	0.002	0.002	0.241
28	0.021	53	0.000	0.000	0.005	0.005	0.111
29	0.020	53	0.000	0.000	0.004	0.004	0.115
30	0.042	56	0.000	0.000	0.004	0.004	0.115
31	0.045	56	0.057	0.000	0.004	0.004	0.115
SUM	0.504	-	1.037	0.049	0.081	N.A.	-
AVG	0.307	56	0.033	0.002	0.003	N.A.	0.109
NBS IN	0001	N113			0102		N111

* DENOTES UNAVAILABLE DATA.
@ DENOTES NULL DATA.
N.A. DENOTES NOT APPLICABLE DATA.

SOLAR HEATING AND COOLING DEMONSTRATION PROGRAM

MONTHLY REPORT

COLLECTOR ARRAY PERFORMANCE

SITE: ORTIZ AND BELL, LOT # ESCONDIDO, CASOLAP/1087-70/02
 REPORT PERIOD: MARCH, 1979

DAY OF MONTH	INCIDENT SOLAR ENERGY MILLION BTU	OPERATIONAL INCIDENT ENERGY MILLION BTU	COLLECTED SOLAR ENERGY MILLION BTU	DAYTIME AMBIENT TEMP DEG F	COLLECTOR ARRAY EFFICIENCY
1	0.041	0.000	0.000	50	0.000
2	0.467	0.366	0.169	57 #	0.361
3	0.408	0.346	0.180	74	0.443
4	0.445	0.389	0.148	84	0.354
5	0.473	0.374	0.173	89	0.380
6	0.451	0.397	0.141	87	0.282
7	0.405	0.321	0.096	81	0.238
8	0.218	0.128	0.025	71 #	0.117
9	0.372	0.206	0.022	75	0.248
10	0.400	0.341	0.132	75	0.327
11	0.400	0.305	0.120	76	0.300
12	0.123	0.011	0.000	60	0.000
13	0.235	0.200	0.073	67	0.277
14	0.127	0.030	0.007	55	0.055
15	0.226	0.223	0.074	50 #	0.260
16	0.226	0.179	0.058	54	0.253
17	0.203	0.154	0.000	52 #	0.075
18	0.221	0.136	0.035	55	0.175
19	0.330	0.316	0.028	55	0.128
20	0.334	0.320	0.007	55	0.060
21	0.330	0.423	0.112	55	0.338
22	0.455	0.435	0.189	58	0.192
23	0.378	0.371	0.169	59 #	0.237
24	0.349	0.351	0.055	59	0.424
25	0.378	0.300	0.000	56 #	0.146
26	0.192	0.120	0.000	57	0.000
27	0.111	0.143	0.012	57	0.062
28	0.220	0.140	0.085	59 #	0.205
29	0.420	0.402	0.045	67	0.202
30	0.450	0.426	0.163		0.354
31					
SUM	9.504	7.619	2.558	-	-
AVG	0.307	0.246	0.082	66	0.260
NPSTD	0001		0100		N100

* DENOTES UNAVAILABLE DATA.
 # DENOTES NULL DATA.
 N.A. DENOTES NOT APPLICABLE DATA.

MONTHLY REPORT
STOPAGE PERFORMANCE

SITE: ORT17 AND REILL, LOT 8
REPORT PERIOD: MARCH, 1979

ESCONDIDO, CASOLAR/1787-79/03

DAY OF MONTH	ENERGY TO STORAGE MILLION BTU	ENERGY FROM STORAGE MILLION BTU	CHANGE IN STORAGE MILLION BTU	STORAGE AVERAGE TEMP DEG F	STORAGE EFFICIENCY
1	0.000	0.020	-0.064	110	1.000
2	0.091	0.017	0.041	111	0.633
3	0.093	0.032	0.020	118	0.562
4	0.097	0.091	-0.010	112	0.829
5	0.095	0.093	0.001	123	0.569
6	0.095	0.054	0.028	133	0.861
7	0.111	0.028	0.033	139	0.499
8	0.070	0.028	-0.003	141	0.362
9	0.010	0.028	0.054	131	0.511
10	0.071	0.024	0.023	131	0.556
11	0.071	0.032	0.006	134	0.599
12	0.070	0.032	0.012	135	0.631
13	0.000	0.037	-0.082	116	1.000
14	0.025	0.030	-0.048	110	0.385
15	0.001	0.009	-0.010	108	0.600
16	0.030	0.005	-0.011	103	0.360
17	0.016	0.000	-0.043	103	0.823
18	0.046	0.011	-0.031	95	0.937
19	0.000	0.034	-0.050	97	0.136
20	0.004	0.015	-0.021	88	1.241
21	0.037	0.001	-0.030	88	0.743
22	0.001	0.000	-0.001	91	0.074
23	-0.065	0.021	0.062	98	0.632
24	0.005	0.014	-0.021	102	1.280
25	0.005	0.011	-0.006	99	3.064
26	0.009	0.033	-0.033	99	3.140
27	-0.025	0.004	-0.005	93	0.050
28	-0.001	0.000	-0.018	92	0.048
29	0.047	0.000	0.070	96	0.692
30					1.481
31					
SUM	1.131	0.660	-0.073	-	-
AVG	0.036	0.021	-0.002	110	0.519
NRS ID	Q200	Q201	Q202		N108

* DENOTES UNAVAILABLE DATA.
@ DENOTES NULL DATA.
N.A. DENOTES NOT APPLICABLE DATA.

SOLAR HEATING AND COOLING DEMONSTRATION PROGRAM

MONTHLY REPORT HOT WATER SUBSYSTEM

SOLAR/1087-70/03

FSCONDIPO, CALIFORN

SITE: ORTIZ AND REILL, LOT A
REPORT PERIOD: MARCH, 1979

DAY OF MON.	HOT WATER LOAD MILLION BTU	SOLAR FR. CF LOAD PER CENT	SOLAR ENERGY USED MILLION BTU	OPER ENERGY MILLION BTU	AUX THERMAL USED MILLION BTU	AUX ELECT FUEL MILLION BTU	AUX FOSSIL FUEL MILLION BTU	ELECT ENERGY SAVINGS MILLION BTU	FOSSIL ENERGY SAVINGS MILLION BTU	SUP. WAT. TEMP DEG F	HOT WAT. TEMP DEG F	HOT WATER USED GAL
1	0.027	100	0.019	0.012	0.000	0.000	NOT APPLICABLE	0.000	0.000	63	125	59
2	0.026	100	0.040	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	64	119	54
3	0.025	100	0.033	0.006	0.000	0.000	NOT APPLICABLE	0.000	0.000	64	119	57
4	0.029	100	0.033	0.006	0.000	0.000	NOT APPLICABLE	0.000	0.000	66	116	66
5	0.033	100	0.049	0.002	0.000	0.000	NOT APPLICABLE	0.000	0.000	73	112	73
6	0.033	100	0.027	0.001	0.000	0.000	NOT APPLICABLE	0.000	0.000	65	120	74
7	0.033	100	0.031	0.001	0.000	0.000	NOT APPLICABLE	0.000	0.000	67	122	22
8	0.027	100	0.022	0.001	0.000	0.000	NOT APPLICABLE	0.000	0.000	69	122	67
9	0.024	100	0.027	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	71	113	49
10	0.032	100	0.033	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	70	113	44
11	0.030	100	0.030	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	69	113	61
12	0.030	100	0.024	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	70	112	64
13	0.025	100	0.017	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	68	111	14
14	0.027	100	0.029	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	67	116	86
15	0.027	100	0.027	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	67	116	45
16	0.020	100	0.017	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	65	110	05
17	0.020	100	0.015	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	65	113	60
18	0.016	100	0.021	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	64	114	38
19	0.016	100	0.026	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	65	114	82
20	0.016	100	0.049	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	65	118	48
21	0.040	100	0.030	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	102	158	45
22	0.034	100	0.011	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	181	156	55
23	0.032	100	0.009	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	68	120	27
24	0.018	100	0.009	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	68	107	33
25	0.018	100	0.032	0.000	0.000	0.000	NOT APPLICABLE	0.000	0.000	68	119	46
26	0.045	100	0.057	0.001	0.000	0.000	NOT APPLICABLE	0.000	0.000	76	114	71
SUM	0.797	-	0.814	0.276	0.001	0.001	N.A.	0.538	N.A.	-	-	1723
AVG	0.026	100	0.026	0.009	0.000	0.000	N.A.	0.017	N.A.	69	124	56
NBS	Q302	N300	Q300	Q303	Q301	Q305	Q306	Q311	Q313	N305	N307	N308

* DENOTES UNAVAILABLE DATA.
 @ DENOTES NULL DATA.
 N.A. DENOTES NOT APPLICABLE DATA.

MONTHLY REPORT
SPACE HEATING SUBSYSTEM

SITE: ORTIZ AND REILL, LOT 8
REPORT PERIOD: MARCH, 1979

ESCONDIDO, CA

SOLAP / 1087-79/03

DAY OF MON.	SPACE HEATING LOAD MILLION BTU	SOLAR FR. OF LOAD PCT	SOLAR ENERGY USED MILLION BTU	OPER ENERGY MILLION BTU	AUX THERMAL USED MILLION BTU	AUX ELECT FUEL MILLION BTU	AUX FOSSIL FUEL MILLION BTU	ELECT SAVINGS MILLION BTU	FOSSIL SAVINGS MILLION BTU	BLDG TEMP DEG. F	AMB TEMP DEG. F
1	0.087	3	0.003	0.008	0.084		0.140	-0.000	0.005	71	48
2	0.124		0.000	0.004	0.110		0.184	-0.000	0.000	69	48
3	0.135	25	0.034	0.008	0.198		0.163	-0.001	0.055	68	55
4	0.197	4	0.045	0.008	0.052		0.086	-0.002	0.075	71	55
5	0.083		0.000	0.002	0.043		0.134	-0.000	0.000	73	60
6	0.046		0.000	0.000	0.000		0.070	-0.000	0.000	74	70
7	0.000		0.000	0.000	0.000		0.000	-0.000	0.000	77	62
8	0.000		0.000	0.000	0.012		0.020	-0.000	0.000	71	65
9	0.000		0.000	0.000	0.062		0.034	-0.000	0.000	72	65
10	0.000		0.000	0.000	0.020		0.031	-0.000	0.000	70	62
11	0.000		0.000	0.000	0.015		0.009	-0.000	0.000	72	65
12	0.015		0.000	0.000	0.063		0.155	-0.000	0.000	71	65
13	0.097		0.000	0.000	0.000		0.191	-0.001	0.037	71	55
14	0.136	1	0.022	0.000	0.114		0.134	-0.000	0.000	69	55
15	0.096		0.000	0.000	0.026		0.160	-0.000	0.000	68	55
16	0.060		0.000	0.003	0.057		0.164	-0.000	0.000	69	55
17	0.000		0.000	0.001	0.000		0.000	-0.000	0.000	69	50
18	0.000	4	0.007	0.009	0.174		0.290	-0.001	0.012	67	50
19	0.000		0.000	0.000	0.000		0.000	-0.000	0.000	70	51
20	0.031	25	0.010	0.013	0.094		0.107	-0.002	0.052	71	55
21	0.170	6	0.000	0.011	0.165		0.267	-0.002	0.170	69	55
22	0.091		0.000	0.000	0.075		0.147	-0.000	0.000	69	55
23	0.018		0.000	0.002	0.088		0.103	-0.000	0.000	66	55
24	0.000		0.000	0.000	0.019		0.131	-0.000	0.000	71	55
25	0.020	16	0.000	0.000	0.100		0.166	-0.003	0.030	71	55
26	0.000		0.000	0.000	0.020		0.034	-0.000	0.000	71	55
27	0.120	23	0.000	0.000	0.130		0.217	-0.000	0.055	73	55
28	0.140		0.033	0.013	0.104		0.173	-0.004	0.000	70	55
29	0.010	13	0.000	0.001	0.111		0.115	-0.000	0.000	68	55
30	0.111		0.015	0.008	0.082		0.137	-0.003	0.025	70	55
31	0.120		0.000	0.001	0.021		0.034	-0.000	0.000	70	56
SUM	2.437	-	0.223	0.121	2.151	N.A.	3.460	-0.022	0.372	-	-
AVG	0.079	9	0.007	0.004	0.069	N.A.	0.112	-0.001	0.012	70	56
NBS	Q402	N400	Q400	Q403	Q401		Q410	Q415	Q417	N406	N113

* DENOTES UNAVAILABLE DATA.
@ DENOTES NULL DATA.
N.A. DENOTES NOT APPLICABLE DATA.

SOLAR HEATING AND COOLING DEMONSTRATION PROGRAM

MONTHLY REPORT ENVIRONMENTAL SUMMARY

SITE: OPTIZ AND REILL, LOT 8
REPORT PERIOD: MARCH, 1979
FSCONDING, CALIFORNIA
SOLAP/1097-79/03

DAY OF MONTH	TOTAL INSOLATION BTU/SQ.FT	DIFFUSE INSOLATION BTU/SQ.FT	AMBIENT TEMPERATURE DEG F	DAYTIME AMBIENT TEMP DEG F	RELATIVE HUMIDITY PERCENT	WIND DIRECTION DEGREES	WIND SPEED M.P.H.
1	212	NOT APPLICABLE	48	50	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
2	2433		48	57			
3	2121	NOT APPLICABLE	50	74	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
4	2122		57	84			
5	2319	NOT APPLICABLE	65	88	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
6	2462		70	87			
7	2350	NOT APPLICABLE	62	81	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
8	2111		60	71			
9	1136	NOT APPLICABLE	59	75	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
10	1937		60	76			
11	2105	NOT APPLICABLE	62	67	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
12	2030		56	60			
13	1382	NOT APPLICABLE	57	67	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
14	1670		55	62			
15	1494	NOT APPLICABLE	55	59	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
16	1185		49	59			
17	1656	NOT APPLICABLE	50	54	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
18	1056		50	52			
19	1150	NOT APPLICABLE	51	55	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
20	1507		51	55			
21	1719	NOT APPLICABLE	55	69	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
22	2261		55	60			
23	2371	NOT APPLICABLE	55	60	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
24	2077		55	56			
25	1970	NOT APPLICABLE	60	57	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
26	1254		56	59			
27	1000	NOT APPLICABLE	55	67	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
28	1101		52	67			
29	2186	NOT APPLICABLE	53	67	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
30	2186		56	67			
31	2390	NOT APPLICABLE	56	67	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE
SUM	49500		-	-			
AVG	1597	N.A.	56	66	N.A.	N.A.	N.A.
NRS ID	0001	N.A.	N112		N115	N114	

* DENOTES UNAVAILABLE DATA.
@ DENOTES NULL DATA.
N.A. DENOTES NOT APPLICABLE DATA.

UNIVERSITY OF FLORIDA



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